

On Some Stoneflies (*Plecoptera*) from the eastern parts of South Africa.

by

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The present communication is primarily based on a small collection of stoneflies made by myself in the Mount aux Sources area (Natal). In addition I have examined stoneflies collected by Dr. E. McC. Callan of the Rhodes University, and by students of the same University in the Grahamstown area, and also stoneflies collected by J. B. Balinsky in the Northern Transvaal (river Metlapetsi, near Haenertsburg). In this paper I am going to deal only with the stoneflies of the family *Leuctridae* (*Nemouridae?*), as the South African representatives of the subfamily *Neoperlinae* have been dealt with exhaustively by H. B. N. Hynes (1952a, 1952b) and I do not have much to add to the information given.

Our knowledge of the South African Leuctrids (Nemourids) is so far based on a collection made by Dr. K. H. Barnard in the Cape Peninsula and adjoining parts of the Western Province, and described in two papers — by R. J. Tillyard (1931) and by K. H. Barnard himself (1934). The easternmost locality at which stoneflies other than Neoperlids were collected by K. H. Barnard is George. Already the above enumeration of the localities from which I had stoneflies for my investigation shows that they appear to be distributed all along the southern and eastern edge of the South African plateau, including the Drakensberg as far north as the north-eastern Transvaal.

The South African stoneflies apart from the Neoperlids were originally described by Tillyard (l.c.) as belonging to the family Nemouridae. This family, according to Tillyard, should include also the genus *Leuctra*, considered by most authors as constituting, together with a few other forms the family Leuctridae. If the family Leuctridae is to be regarded as separate from the family Nemouridae, the South African genera *Aphanicerca*, *Aphanicercopsis*, *Aphanicerella*, and *Desmonemoura* should clearly be joined with the Leuctrids, as has been done by P. W. Claassen in his "Catalogue of the Plecoptera of the World" (1940). Following the latter authority I will therefore consider the South African stoneflies as Leuctrids, to which they are extremely similar in general appearance, whereas they do not possess the specialised features (especially in wing venation) which are peculiar to the Nemourids; the well developed supra-anal lobe presents, however, a similarity to the latter family.

The specimens collected in the eastern parts of South Africa appear to

represent five species, of which four are new. They belong to two genera, *Aphanicercopsis* and *Aphanicercella*. Through the courtesy of Dr. K. H. Barnard I have been able to see specimens of three species representing these genera in the Cape fauna. All specimens studied have been preserved in alcohol. I have examined the insects in their natural state, under a binocular microscope with magnification x 64. I have refrained from making microscopic preparations in canada balsam of the posterior segments of the abdomen, as in my opinion the distortion of these parts during preparation, and the impossibility of studying the preparations subsequently from different angles by far outweighs the advantages of making them transparent. The drawings illustrating this paper have been made with the aid of a camera lucida, and the measurements were undertaken with the aid of an ocular micrometer.

Genus *Aphanicercopsis* Barnard (1934).

Aphanicercopsis amatolae n. sp.

A relatively large and robust species. Antennae brown, head dark chestnut brown, no trace of frontal callosities. Compound eyes grey, ocelli white, body a lighter yellowish brown, pronotum broader than long with thin dark anterior and median lines, and indistinct pattern on lateral fields. Wings greyish, intercubital crossveins 8—12 in ♂♂ and 9—13 in ♀♀. Legs distinctly bicolorous: ground colour of femur yellow, distal end brown, tibia and tarsus brown as distal end of femur.

♂ genitalia. Abdominal segments 1—8 without peculiarities. Basal appendage of 9th sternite large and of a very peculiar shape: its proximal part (stalk) is inflated, chitinised, and covered with strong short hairs. The soft part is turnip-shaped (Fig. 1a). Subgenital plate elongated triangular, posterior part curved upwards, with membranous apex. 9th tergite strongly chitinised broadly emarginated at anterior edge, posterior edge broadly and uniformly convex, bearing a pair of sharp spines near the midline (Fig. 1b). 10th tergite consisting of two broad heavily chitinised plates with blackened medial edges. Supra-anal lobe flattened and pressed against the groove between the plates of 10th tergite, subconical, with heavily chitinised sides and blunt apex. Chitinised parts of titillators in the form of slightly curved narrow plates, with concave outer edges and bases drawn out laterally in the form of supporting processes. A small chitin plaque bearing a tiny spinelet at postero-lateral angle of titillator on its upper side. Cerci thick and short (Fig. 1c), with distinct rudiment of 2nd segment.

♀ genitalia (Fig. 1d, e). Abdominal segments 1—7 membranous, chitinised plates laterally at proximal edge of sternites present or absent, distal edges of sternites not specially chitinised. Segments 8—10 chitinised. Subgenital plate of the 8th segment elongated, bifid at the end, the two terminal lobes narrow, pale, with long hairs at the tip. 9th sternite produced into a conical process, subanal plates elongated and tapering at the end, reaching slightly beyond the tips of subgenital plate.

Cerci very short but with a trace of the rudimentary 2nd segment.

	Length of body	Length of fore wing	Length of pronotum	Breadth of pronotum
♂ ♂	5.3—5.6 mm.	6.8—7.3 mm.	0.7—0.725 mm.	0.95—1.05 mm.
♀ ♀	7.0—8.6 mm.	7.9—10.3 mm.	0.75—1.0 mm.	1.10—1.275 mm.

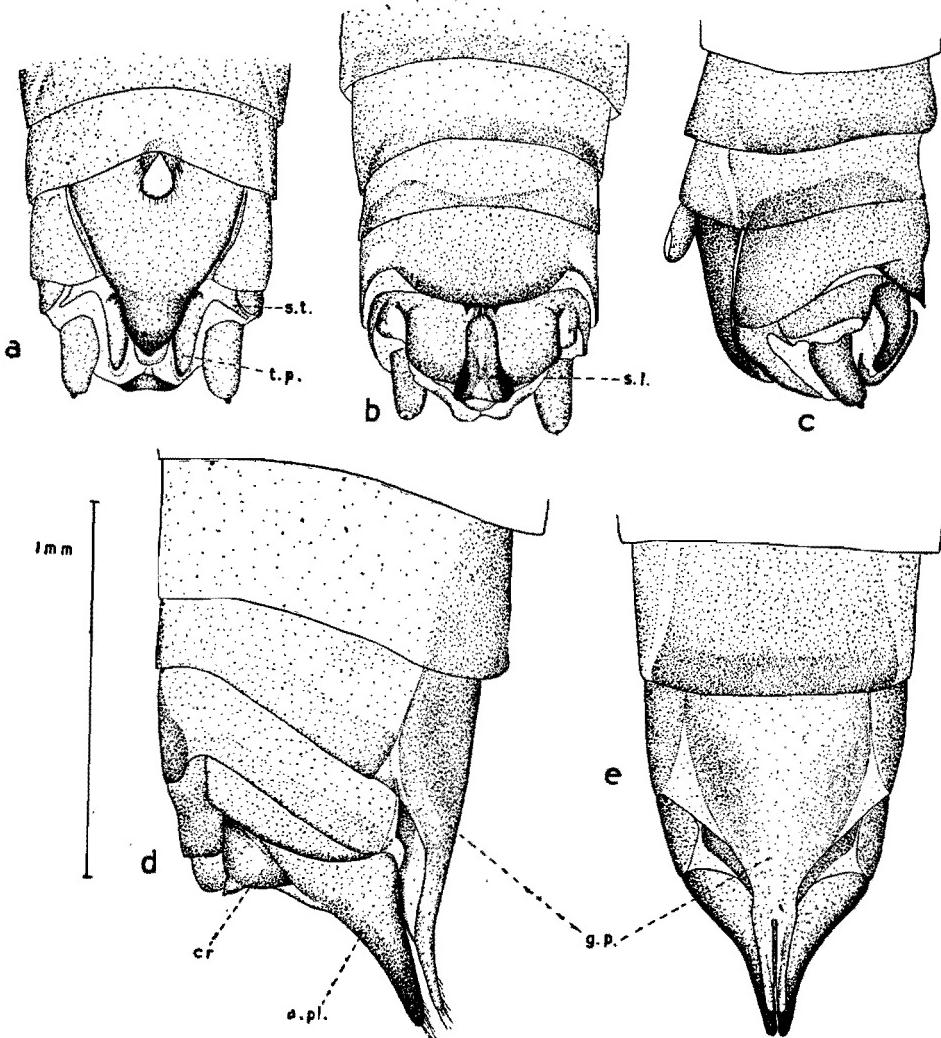


FIG. 1. *Aphanicercopsis amatolae* n. sp. a - ventral, b - dorsal, c - lateral view of the abdomen of the ♂, d - lateral, e - ventral view of the abdomen of the ♀. a.pl. - subanal plates, cr. - cerci, g.p. - subgenital plate, s.l. - supra-anal lobe, s.t. - lateral supporting process of the titillator, t.p. - proximal chitinised part of the titillator.

Material:

- Holotype ♂, Grahamstown, Sept 1954 (Coll. H. Holmes).
 Allotype ♀, Hogsback, Amatola Mountains, 21 Sept. 1952 (coll. N. J. Myers). Holotype and allotype in the Transvaal Museum.
 Paratype ♂, Hogsback, Amatola Mountains, April 1953 (Coll. P. Graham).
 Paratype ♀ ♀, 1 from Grahamstown, 7 from Hogsback, Amatola Mountains.

A third ♂, from Grahamstown, differs from the typical *A. amatolae* n.sp. in having only one spine at the posterior edge of the 9th tergite (instead of two), in having a very much reduced supra-anal lobe, and in its somewhat broader chitinised plates of the titillators. Whether these differences are due to individual anomaly, or whether the specimen belongs to a different new species of *Aphanicercopsis* — I am unable to judge.

The ♂♂ have not been recorded in copula with the ♀♀ so that they are assigned to the same species on the ground of similar habitus, size, and, especially, leg coloration, which by previous experience I have found to be quite a valuable specific character in stoneflies (Balinsky, 1950). If the anomalous ♂ proves to belong to a second species, the females of that species might be amongst the specimens studied. I could not, however, subdivide them into two distinct types, although some variation is present, especially in the length of the subgenital plate.

Biology: *Aphanicercopsis amatolae* n.sp. appears to be a characteristic species of the Amatola Mountains, and is, so far as my material goes, the only Leuctrid occurring there. Although a few specimens have been captured near Grahamstown, it appears to be rare there, while the common species near Grahamstown is *Aphanicercella cassida* Barnard.

Remarks: *Aphanicercella amatolae* n.sp. differs very considerably from the four species of the genus listed by Barnard (l.c.). Most conspicuous is the complete absence of the median plate of the 10th tergite and of the supporting struts connecting this plate with the basis of the supra-anal lobe in the ♂♂. The enlarged 9th tergite with spines at its posterior edge is also very peculiar, there is nothing similar in the other species, as I have been able to determine by studying specimens of *Aphanicercopsis denticulata* Tillyard and *Aphanicercopsis tabularis* Barnard from the Cape. The peculiar structure of the basal appendage of the 9th sternite, as described above, is also lacking in *A. denticulata* and *A. tabularis*, and presumably also in *A. outeriquae* Barnard and *A. hawaquae* Barnard, as no mention of anything similar is made by Barnard in his description of the latter two species.

The classification of my species as an *Aphanicercopsis* would appear to be based mainly on negative characters if only the ♂♂ are taken into consideration: absence of appendages on the 9th tergite, simple structure of the 10th pleurites which are not prolonged into chitinised points forming a clasper-like structure. The genital armature of the ♀ is on the other hand

quite typical for the genus *Aphanicercopsis*, and this is a weighty argument in favour of the classification adopted. Indeed it might be difficult to separate all ♀♀ of *A. amatolae* n.sp. from ♀♀ of *A. denticulata* and *A. tabularis* on the structure of the genital parts alone. In most ♀♀ of *A. amatolae* n.sp., however, the subgenital plate is broader, and its attenuated distal part is shorter than in the Cape species. A further distinction that may be used is the more robust build of ♀♀ of *A. amatolae* n.sp. and the very characteristic colouration of the legs (the latter are uniformly coloured in the specimens of *A. denticulata* and *A. tabularis* which I examined).

Genus *Aphanicercella* Tillyard (1931).

***Aphanicercella cassida* Barnard (1934, p. 541—542, fig. 17).**

Specimens studied:

2 ♀♀, Grahamstown 4.4.1952.

2 ♂♂ and ♀, Grahamstown 22.9.1952.

2 ♀♀, Grahamstown 15.4.1953.

3 ♂♂ and 2 ♀♀, Grahamstown, Sept. 1954.

2 ♂♂ and 3 ♀♀, R. Metlapetsi near Haenertsburg, Northern Transvaal.

Remarks: *A. cassida* was described by Barnard from one ♂ specimen only. The material at hand (7 ♂♂) show that some of the characters indicated by Barnard are subject to variation. This is true particularly in respect of the shape of the supra-anal lobe which is described and depicted by Barnard as "helmet-shaped". In some of my specimens this lobe is cuneiform, with no trace of an attenuated apex at the end: in others there is an attenuated apex, and the contours are more rounded. The differences are gradual, and there is no consistent distinction between the specimens from Grahamstown, and those from the Northern Transvaal. The median plate of the 10th tergite is, in my specimens, not as angular as depicted by Barnard, but rather falciform. The median forwardly directed tip of this plate, as drawn by Barnard, is completely absent in some of the specimens, but present in others. Further minor differences from Barnard's description: The chitinised band on the ventral surface of the titillator, although bifid, as stressed by Barnard, has the lateral branch distinctly longer and broader than the median branch (Barnard draws both branches as of equal breadth). The supporting lateral process of the titillator is drawn by Barnard as tapering to a sharp point: in my specimens this process is simple, rod-shaped with a rounded end (The process appears in my specimens as tapering to a point when viewed from a certain angle. This is an incorrect impression, however). In spite of these discrepancies I believe that the specimens under consideration should be classified as belonging to *Aphanicercella cassida* Barnard. Unfortunately I have not been able to see the type specimens of that species.

Biology. A most peculiar feature of *A. cassida* is its very wide geographical distribution: from George in the Cape Province to Northern Transvaal

(including the Grahamstown area), whereas most of the other species of South African Leuctrids are rather local. In the vicinity of Grahamstown *A. cassida*, according to information received from Dr. E. McC Callan, was collected along a small stream to the South of the town. The Metlapetsi river in the Northern Transvaal flows at a high altitude in the Drakensberg Mountains (Wolkberg group). The actual site at which the flies were collected is on a small nameless tributary of the main river, a stream with numerous small waterfalls running down a narrow gorge.

The new species which I assign to the genus *Aphanicercella* have certain characters in common, so that they obviously present a compact group inside the genus. The most obvious feature is the structure of the 10th tergite. In the genotype, *A. barnardi* Tillyard, the 10th tergite consists of four parts (Barnard, l.c., p. 537): two lateral pieces, a small triangular median piece, and a transverse bar posteriorly, supporting the supra-anal lobe. In my new species (See fig. 2e) the posterior supporting bar is represented by two small elements connected to the right and left posterior angle of the supra-anal lobe. The three other pieces can be recognised, but of these the middle piece is much more strongly developed, and its anterior tip is produced into a powerful recurved hook (Fig. 2c, 3c) which is not found in any of the previously described species (I have satisfied myself that in *Aphanicercella barnardi* Tillyard there is no such hook, and that the structure of the 10th tergite has been described and figured by Barnard — l.c. p. 538 — essentially correctly, although I have not been able to see the "scabrous knobs" on the lateral plates; the original description of *A. barnardi* by Tillyard is very incomplete, and is of no use in this connection). The pleurites are not so well developed, and their chitinised tips are shorter than in the typical species of the genus. The bases of the titillators are curved outwards and posteriad, thus forming lateral supporting processes which show differences in shape and are very useful for distinguishing the species. The genital segments in females have the same relatively simple structure as in the other species of the genus *Aphanicercella*. Barnard's statement (l.c. p. 536) that members of the genus *Aphanicercella* do not have clear patches on the fore wings does not apply to one of the species here described.

Aphanicercella gudu n. sp.

A relatively large species. General colouration (in alcohol specimens) chestnut brown, clypeus, frons, and vertex lighter coloured, occiput darker. Frontal callosities indistinct. Compound eyes violet brown, ocelli white. Pronotum broader than long, with indistinct sculpture. Wings rather uniformly shaded. Intercubital crossveins: 8—13 in ♂♂, 8—12 in ♀♀. Femur brownish-yellow with sharply darkened distal end, so as almost to have a dark spot distally (especially distinct in hind legs), tibia and tarsus brown.

♂ genitalia. Subgerminal plate broad and short, posterior end produced

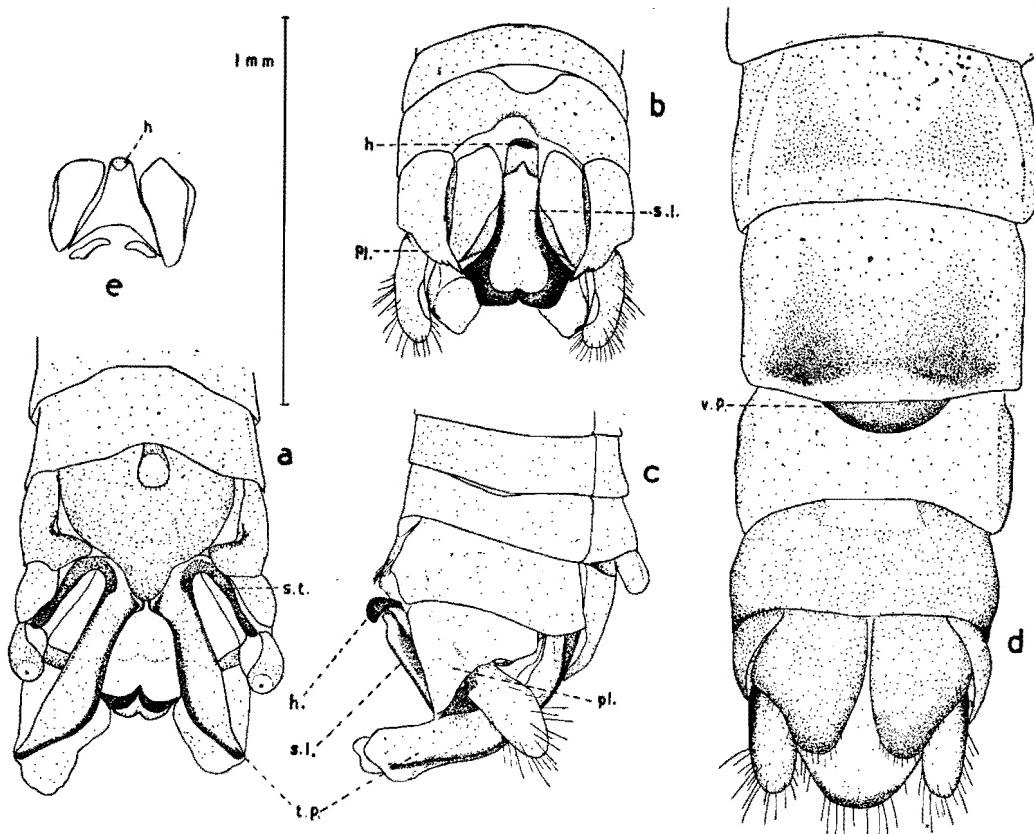


FIG. 2. *Aphanicercella gudu* n. sp. a - ventral, b - dorsal, c - lateral view of the abdomen of the ♂, d - ventral view of the abdomen of the ♀, e - sclerotised parts of the 10th tergite of the ♂.
 h - hook on the median piece of the 10th tergite, p.l. - pleurites of the 10th segm.,
 s.l. - supra-anal lobe, s.t. - lateral supporting processes of the titillators, t.p. - proximal chitinised part of the titillator, v.p. - plate at orifice of vagina.

into a short blunt tip (Fig. 2a). Basal appendage of the 9th sternite moderately long, slightly broadening distally and obtuse at the end. 9th tergite excised both at anterior and at posterior edge middorsally. 10th tergite: lateral parts in the form of simple plates, narrowing posteriorly, without scabrous knobs, median part approximately triangular with base posteriorly, and anterior apex bent upward and produced into a recurved hook (Fig. 2b, c). Pleurites 10 produced posteriorly into acute tips with a slight serration subterminally on outer edge. Supra-anal lobe broad posteriorly but narrowed and with almost parallel sides in the free anterior part, with very heavily chitinised sides; right and left chitinised parts touching each other but not confluent

posteriorly (Fig. 2b). Titillators long and curved upwards, mainly chitinised along the median edge, latter projects slightly inwards at the base. Lateral supporting processes of titillators in the form of simple rods reaching to the bases of the cerci (Fig. 2a). Cerci rather short, with membranous median surface (Fig. 2b, c).

♀ genitalia (Fig. 2d). Segments 1—5 without peculiarities. Posterior edge of 6th sternite may be more or less chitinised. Posterior edge of 7th sternite forms a strongly chitinised subgenital plate, the latter is distinctly bipartite in younger specimens (as in Fig. 2d), but the chitinised parts fuse together in very mature ♀♀. An additional heavily chitinised transverse plate posterior to the above, immediately in front of the vaginal orifice. 8th sternite membranous, but with chitinised pleural areas. 9th sternite chitinised with a distinct emargination at anterior edge. Subanal plates broad and rounded posteriorly. Cerci short. 10th tergite rounded posteriorly, its median part projecting in a rounded tip.

Length of body	Length of fore wing	Length of pronotum	Breadth of pronotum
♂ ♂ 4.6—5.95 mm.	5.7—6.45 mm.	0.45—0.55 mm.	0.65 —0.775 mm.
♀ ♀ 6.1—7.25 mm.	7.3—7.9 mm.	0.6 —0.72 mm.	0.875—0.95 mm.

Material: Holotype ♂ and Allotype ♀, Gudu River, Mt. aux Sources, Natal, 26.1.1954, in the Transvaal Museum.

Paratypes: 43 ♂♂ and 85 ♀♀ from the same locality and from Tugela River (Tugela Gorge), Mt. aux Sources, Natal, 25.1—4.2.1954, divided between the South African Museum, the Transvaal Museum and the author's collection.

Biology: found flying and on rocks near rapidly running streams in the upper reaches of the mountains. Take to the wing preferably in overcast weather or when it is drizzling.

Remarks. The species may be distinguished from those described by Tillyard (1931) and Barnard (1934) by the middle piece of the 10th tergite being produced into a recurved hook (1), by the shape of the supra-anal lobe which is different from all described and figured by the abovementioned authors (2), by the tips of the pleurites 10 being not so elongated and not so heavily chitinised (3). I have compared my specimens with specimens of *A. barnardi* Tillyard from the collection of the South African Museum; the difference in the shape of the pleurites will be clearly seen if my fig. 2b is compared with Barnard's drawing of *Aphanicercella scutata*, l.c. fig. 16a.

The distinctions between *A. gudu* n.sp. and the following species will be indicated further.

The ♀♀ assigned to this species have not been observed in copula with the ♂♂, but in view of the large numbers of ♂♂ and ♀♀ observed together in the same localities, and of only small numbers of ♂♂ and ♀♀ of other types, the determination does not appear to be at all dubious: on the Gudu

River, for instance, 61 ♀♀ of this type were caught together with 29 ♂♂ of *A. gudu* n.sp., and with only 2 ♀♀ of a different type.

Aphanicercella tugelae n. sp.

A smaller species. General colouration (in alcohol specimens) chestnut brown, occiput only slightly darker than the rest of head. Frontal callosities indistinct. Compound eyes violet brown, ocelli white. Pronotum broader than long, with a very indistinct sculpture. Wings shaded, but with a clear patch across the proximal ends of MA₁ and MA₂ of the fore wings. Intercubital crossveins 8—10 in ♂♂, and 7—11 in ♀♀. Legs brown, femur only slightly darker distally, tibia and tarsus uniformly brown.

♂ genitalia. Subgenital plate broad and short (Fig. 3a), posterior end produced into a short blunt tip. Basal appendage of the 9th sternite rather short. 9th tergite excised both at anterior and posterior edge middorsally. 10th tergite: lateral parts in the form of simple plates, narrowing posteriorly, without scabrous knobs, median part approximately triangular, with base posteriorly and anterior apex bent upwards and produced into a recurved hook. (Fig. 3c). Pleurites 10 produced posteriorly into acute tips with a slight serration subterminally on outer edge. Supra-anal lobe (Fig. 3b) broad posteriorly, narrowed in the middle part, and broadened again before the free anterior tip; this broadened part is distinctly wider than the hook of the median part of 10th tergite. Sides of supra-anal lobe very heavily chitinised, right and left chitinised parts touching each other but not confluent posteriorly. Titillators long and curved upwards, mainly chitinised along the medial edge, the latter straight proximally. The lateral supporting processes of the titillators reach the basis of the cerci, and are broadened distally to form rounded spatulate lobes (Fig. 3b and e). Cerci rather short, with membranous median surface.

♀ genitalia (Fig. 3d): Segments 1—6 without peculiarites. 7th sternite slightly less chitinised than the 6th. 8th sternite membranous. 9th sternite chitinised, emarginated at anterior edge. Subanal plates very short and blunt, cerci short, 10th tergite rounded posteriorly, its median part projecting in a rounded tip.

Length of body	Length of fore wing	Length of pronotum	Breadth of pronotum
♂♂ 4.2—4.8 mm.	5.2—5.5 mm.	0.45—0.50 mm.	0.65—0.75 mm.
♀♀ 6.4—7.0 mm.	4.6—5.7 mm.	0.50—0.60 mm.	0.80—0.90 mm.

Material. Holotype ♂, Tugela river (Tugela Gorge) 29.1.1954. Allotype ♀, small stream, tributary of Tugela River, Mt. aux Sources, Natal, 27.1.1954. Both in the Transvaal Museum.

Paratypes: 4 ♂♂ and 4 ♀♀, small stream, as above, 27.1.1954. 4 ♂♂ and 10 ♀♀, Tugela River (Tugela Gorge), Mt. aux Sources, Natal, 25.1 and 29.1.1954. Paratypes divided between the South African Museum, the Transvaal Museum, and the author's collection.

Biology: found flying and on rocks near rapidly running streams in the upper reaches of the mountains.

Remarks. The distinctions of this species from those described by Tillyard (1931) and Barnard (1934) are the same as indicated for *Aphanicercella gudu* n. sp. In addition *A. tugelae* differs from the previously known species of *Aphanicercella* by the presence of clear patches on the wings. *Aphanicercella tugelae* n.sp. differs most conspicuously from *A. gudu* n.sp. in the ♂ sex by the spatulate shape of the lateral supporting processes of the titillators (1), and by the supra-anal lobe broadening towards the free end (2), in the ♀ sex by the feebly chitinised 7th sternite (3), and the absence of a chitinised plate at the vaginal orifice (4), and in both sexes by the smaller size (5), by the evenly coloured legs (6), and by the clear patches on the wings (7). Characters (1), (2), (5), (6), and (7) distinguish *A. tugelae* n.sp. also from the following species.

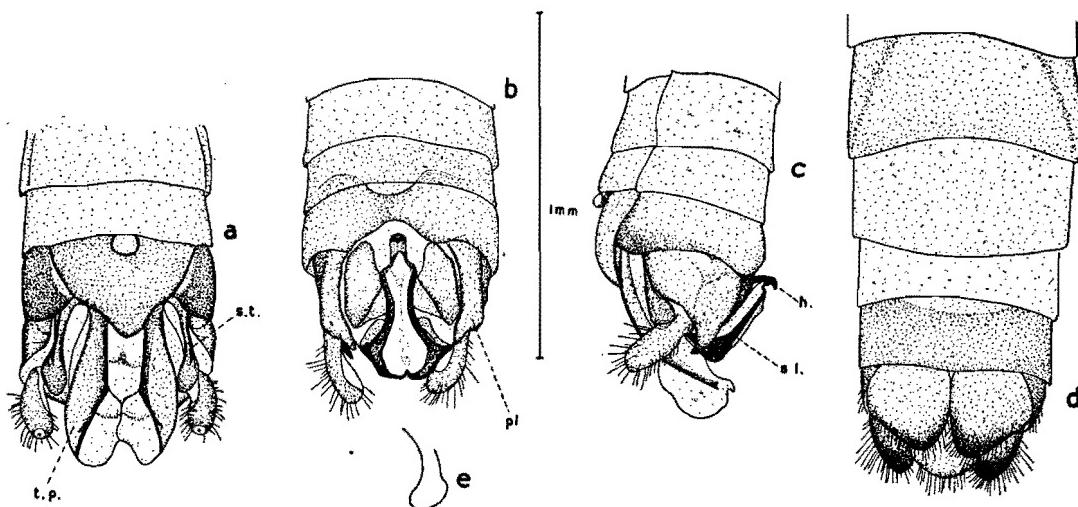


FIG 3. *Aphanicercella tugelae* n. sp. a - ventral, b - dorsal, c - lateral view of the ♂ abdomen, d - ♀ abdomen in ventral view, e - outline of the lateral supporting process of the titillator, h - hook on the median piece of the 10th tergite, pl. - pleurite of the 10th segm., s.l. - supra-anal lobe, s.t. - lateral supporting process of titillator.

In view of the characters listed as common to the sexes there is hardly any doubt that the ♂♂ and the ♀♀ belong to the same species.

Three aberrant specimens must be mentioned here.

1 ♀ collected at the same small stream and on the same date as the allotype ♀ and paratype specimens. The specimen differs from the typical specimens by the absence of the clear patch on the wings, and by having all veins on both pairs of wings heavily adumbrated.

2 ♀♀ collected on the Gudu River (26.1.1954 and 31.1.1954), where

otherwise no *A. tugelae* n.sp. had been found. The specimens are similar to the ♀♀ of *A. tugelae* n.sp. in the structure of the 7th—9th sternites, in having a clear patch on the wings, and in the evenly dark colour of the legs, but differ in the following characters: 1) The pronotum is distinctly larger (length 0.70, breadth 0.95 and 1.00 mm.), 2) wings also slightly longer (6.8 and 7.3 mm.), 3) the intercubital crossveins more numerous (10, 11, 12, 12). I consider it very likely that the two ♀♀ from the Gudu river belong to a different species, the ♂♂ of which have not yet been discovered.

Aphanicercella fontium n. sp.

A relatively large species. General colouration chestnut brown. Occiput distinctly darker than rest of head. Frontal callosities indistinct. Compound eyes violet-brown, ocelli white. Pronotum broader than long, with indistinct sculpture. Wings evenly shaded, with a faint tinge of olive-green. Intercubital crossveins: 7—10 in ♂, and 9—13 in ♀♀. Femur in ♂ brown, slightly darkened distally. Femur in ♀♀ yellowish-brown, distinctly darkened both at proximal and at distal end. Tibia darkened distally, tarsus dark.

♂ genitalia. Subgenital plate triangular, drawn out posteriorly into a rather broad and blunt tip (Fig. 4a). Basal appendage of 9th sternite moderately long, oval. 9th tergite slightly excised posteriorly. 10th tergite: lateral parts in the form of simple plates, median part approximately triangular, with base posteriorly, and anterior apex bent upwards and produced into a distinctly bifid hook (Fig. 4b). Pleurites 10 produced posteriorly into acute tips. Supra-anal lobe broad, subconical, heavily chitinised on sides, right and left chitinised parts in contact on upper (morphologically ventral) surface of the process. Titillators long and curved upwards, with swellings on outer edge proximally, mainly chitinised along the inner edge (Fig. 4a), but with additional strip of thickened chitin on dorsal surface. The lateral supporting processes of the titillators triangular, running out into acute points, the latter not reaching bases of cerci. Cerci very slender and long (Fig. 4c), with membranous median surface.

♀ genitalia (Fig. 4d). Sternites 2—6 with transverse chitinised areas at posterior edges. 7th sternite more feebly chitinised than the 6th, with slightly convex posterior edge. No chitinised plate at vaginal orifice. 8th sternite membranous, but with chitinised pleural areas. 9th sternite chitinised with a distinctly emarginated anterior edge. Subanal plates broad and rounded posteriorly.*). Cerci short. 10th tergite rounded posteriorly, its median part projecting in a rounded tip.

Length of body	Length of fore wing	Length of pronotum	Breadth of pronotum
♂ 5.85 mm.	7.1 mm.	0.6 mm.	0.8 mm.
♀ 5.5—8.2 mm.	7.5—8.0 mm.	0.55—0.725 mm.	0.775—1.0 mm.

*). In ventral view, as in Fig. 4d, the subanal plates are seen in perspective, and their broad and rounded shape cannot be properly appreciated.

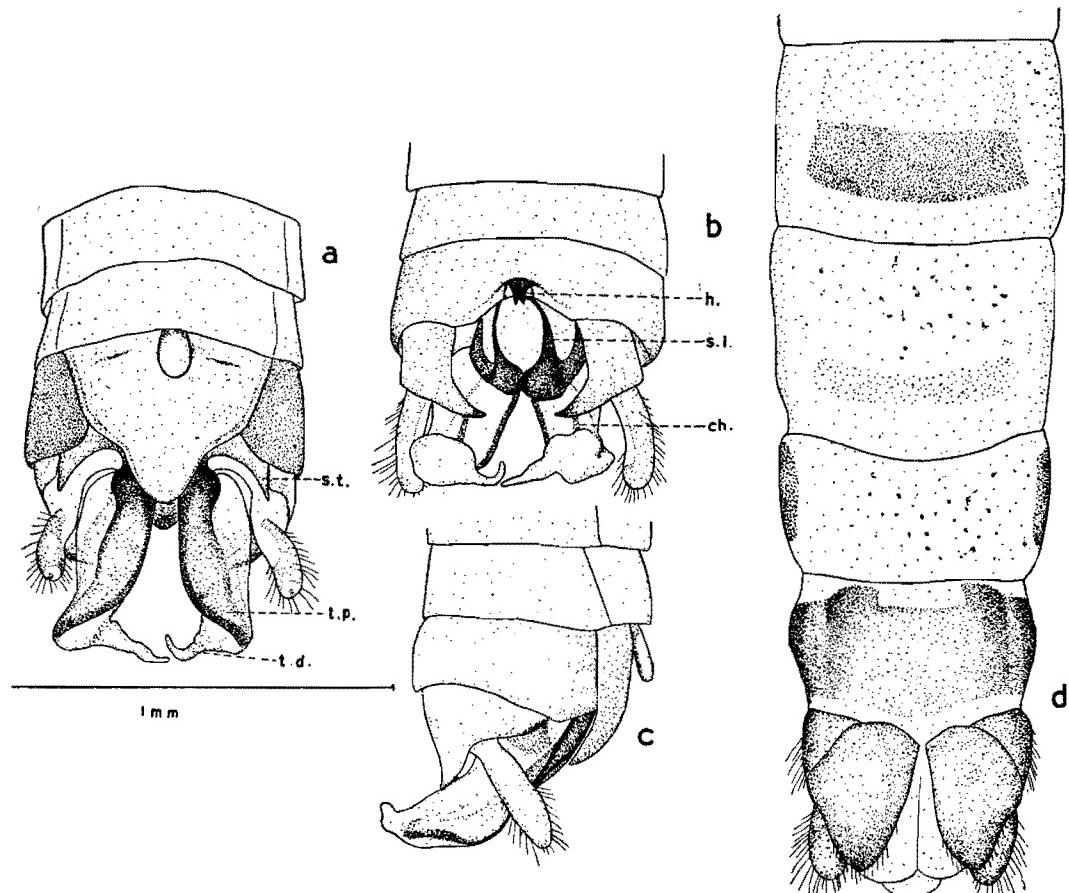


FIG. 4. *Aphanicerella fontium* n. sp., a - ventral, b - dorsal, c - lateral view of ♂ abdomen. d - ventral view of ♀ abdomen. ch. - chitinised strip on dorsal side of titillator, h. - hook on the median piece of the 10th tergite. (in the holotype specimen figured the 10th tergite is pressed partially under the 9th tergite, so that the hook is seen under the transparent posterior edge of the 9th tergite).
 s.l. - supra-anal lobe, s.t. - lateral supporting process of the titillator, t.p. - chitinised proximal part of the titillator, t.d. - soft distal part of the titillator (this part is usually bent on the dorsal side of the proximal part, and thus cannot be shown on a camera lucida drawing).

Material: Holotype ♂, Tugela River (Tugela Gorge), Mt. aux Sources, Natal, 25.1.1954. Allotype ♀, same locality, 29.1.1954. Both holotype and allotype in the Transvaal Museum.

Paratypes: 6 ♀♀ collected in same locality and on same date as allotype..

Biology: found near rapidly running river in the upper reaches of the mountains.

Remarks. The characters distinguishing this species from those described by Tillyard (l.c.) and Barnard (l.c.) are the same as indicated for *Aphanicerella gudu* n. sp.. *Aphanicerella fontium* n. sp. differs from *A. tugelae* n. sp. in both sexes by its larger size and by the absence of clear patches on the wings. The ♂ of *A. fontium* n. sp. differs from *A. gudu* n. sp. by the bifid hook on the median piece of the 10th tergite (1), by the very broad supra-anal lobe (2), by the swellings on the outer margin of the titillators (3), by the triangular shape of the lateral supporting processes of the titillators (4), by the additional strip of chitin on the dorsal surface of the titillators (5); the latter strip is shown on Fig. 4b. The same characters serve also to distinguish the ♂ of *A. fontium* n. sp. from the ♂♂ of *A. tugelae* n. sp., in addition to the distinctions listed in the remarks on that species.

The ♀♀ described above have been classified as belonging to *A. fontium* n. sp. rather tentatively, after exclusion of the other types of ♀♀ which I have recognised as belonging to *A. tugelae* n. sp. and *A. gudu* n. sp.. The ♂ and ♀♀ correspond to one another in size and in the absence of the clear patches on the wings. The colouration of the legs, however, is slightly different, there being no proximal darkening on the femora on the ♂.

In the structure of the genital parts the ♀♀ ascribed to *A. fontium* n. sp. are very similar to those of *A. tugelae* n. sp.. They differ from the latter in size, absence of clear patches on the wings, and in the colouration of legs. From the ♀♀ of *A. gudu* n. sp. they differ in the absence of strong chitinisation of the 7th sternite (even in mature specimens), in the absence of a chitinised plate at the orifice of the vagina, and also in the colouration of the legs.

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